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# Coping and Management Techniques Used by Chronic Low Back Pain Patients Receiving Treatment From Chiropractors



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## ABSTRACT

**Objectives:** The purpose of this study was to describe coping strategies (eg, mechanisms, including self-treatment) that a person uses to reduce pain and its impact on functioning as reported by patients with chronic low back pain who were seen by doctors of chiropractic and how these coping strategies vary by patient characteristics.

**Methods:** Data were collected from a national sample of US chiropractic patients recruited from chiropractic practices in 6 states from major geographical regions of the United States using a multistage stratified sampling strategy. Reports of coping behaviors used to manage pain during the past 6 months were used to create counts across 6 domains: cognitive, self-care, environmental, medical care, social activities, and work. Exploratory analyses examined counts in domains and frequencies of individual items by levels of patient characteristics.

**Results:** A total of 1677 respondents with chronic low back pain reported using an average of 9 coping behaviors in the prior 6 months. Use of more types of behaviors were reported among those with more severe back pain, who rated their health as fair or poor and who had daily occurrences of pain. Exercise was more frequent among the healthy and those with less pain. Female respondents tended to report using more coping behaviors than men, and Hispanics more than non-Hispanics.

**Conclusion:** Persons with chronic back pain were proactive in their coping strategies and frequently used self-care coping strategies like those provided by chiropractors in patient education. In alignment with patients' beliefs that their condition was chronic and lifelong, many patients attempted a wide range of coping strategies to relieve their pain. (*J Manipulative Physiol Ther* 2019;42:582-593)

**Key Indexing Terms:** *Manipulation, Spinal; Low Back Pain; Chiropractic; Complementary Therapies; Adaptation, Psychological*

## INTRODUCTION

Low back pain is common, and about 5% to 10% of those with it develop chronic low back pain (CLBP), with prevalence increasing with age.<sup>1</sup> About 30% of those with

spinal pain in the United States have used chiropractors for relief of their pain.<sup>2</sup> Chiropractors' treatment of CLBP involves manipulation and mobilization and physical therapy modalities. A recent scoping review of the chiropractic literature found that many chiropractors provide multimodal care, including patient education, nutritional supplements, exercise instruction, ice, and heat, among others.<sup>3</sup> Little is known about how CLBP patients cope or self-treat while seeing the chiropractor. Nyiendo et al<sup>4</sup> found that the most frequently reported behaviors occurring during and between episodes of low back pain in chiropractic patients with radiating pain below the knee included (percent in parentheses during and between episodes): proper lifting (94%, 83%), maintenance of correct posture (88%, 82%), strengthening and stretching exercises (84%, 74%), heat (80%, 50%), painkillers (76%, 48%), ice (62%, 30%), supplements (52%, 47%), bed rest (49%, 31%), supports (41%, 26%), and aerobic exercise (34%, 34%). Less is known about other coping and

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management techniques used by CLBP patients who use chiropractic care.

Management of patients with CLBP should be based on an individualized approach to care that combines the best evidence with clinical judgment and patient preferences.<sup>5</sup> Preferences are inferred from individuals' cognitive, behavioral, and emotional responses to an object or entity. Behavioral responses come from either observing what people do or asking them to report what they did. Behaviors are, in a sense, the results of preferences and in economics are often referred to as *revealed preferences*. The purpose of this paper was to describe coping strategies (eg, mechanisms, including self-treatment, that a person uses to reduce pain and its impact on functioning) as reported by chiropractic patients with CLBP and how these coping strategies vary by patient characteristics.

## METHODS

### Sample

This study is a secondary analysis of data collected from a national sample of US chiropractic patients as part of the RAND Center of Excellence for the study of Appropriateness of Care in CAM (CERC).<sup>6</sup> These data were collected in support of this Center to advance methods to determine the appropriateness of manipulation and mobilization for patients with CLBP and chronic neck pain. Using a multistage stratified sampling strategy, we recruited patients from chiropractic practices in 6 states from major geographical regions of the United States: San Diego, California; Tampa, Florida; Minneapolis, Minnesota; Seneca Falls/Upstate, New York; Portland, Oregon; and Dallas, Texas. We recruited 125 clinics across the 6 states reflecting the national proportions of provider sex, years of experience, and patient load as shown in the 2015 Practice Analysis Report from the National Board of Chiropractic Examiners (eg, 30% female practitioners; 30% with 5 to 15 years of experience and the rest with more than 15 years of experience; and equal proportions of those treating 25 to 74 patients per week versus 75 or more patients per week). Excluded were providers who had more than half their patients with open personal injury or workers' compensation litigation, because utilization and reimbursement for these patients differs from that of other patients, and providers who did not use manual manipulation or mobilization.

Screening of patients was conducted over a 4-week period in each clinic office (October 2016 to January 2017) using a prescreening questionnaire self-administered on an iPad to determine whether patients met the study inclusion/exclusion criteria: at least 21 years of age, could speak English well enough to complete the remaining questionnaires, not presently involved in ongoing personal injury/workers' compensation litigation, and have now or ever had low back or neck pain. Patients who met these criteria were invited

to be in the study and, if they agreed and provided e-mail addresses, given an electronically delivered \$5 gift card.

Patients invited to the study were e-mailed a longer screening questionnaire to determine whether they met chronicity criteria for CLBP or chronic neck pain (ie, reported pain for at least 3 months before seeing the chiropractor or stated that their pain was chronic). Patients who met this chronicity criteria were then given consent forms, asked additional questions, and given a \$20 gift card. The survey instrument was developed using focus groups, exploratory interviews, cognitive interviews, and 2 pilot studies. Participants received a \$25 gift card for completing the baseline questionnaire.

The study was approved by the RAND Corporation Human Subjects Protection Committee (#2013-0763) and was registered as an observational study on [ClinicalTrials.gov](https://clinicaltrials.gov) (ID: NCT03162952).

### Measures

In addition to the collection of ratings about the appropriateness of manipulation and mobilization for chronic low back and neck pain using an expert panel, the Center of Excellence in Research on Chiropractic national study collected data to assess patient beliefs and preferences, patient-reported outcomes, costs, and resource allocation. We have previously reported how the patient self-report surveys were developed, based on an extensive literature review of measures in prior chiropractic and complementary and integrative health research in addition to exploratory interviews, focus groups, pile sorting, pretesting using cognitive interviews, time testing, and a pilot study.<sup>7</sup>

Data used in this paper come from the questionnaire administered at baseline in the study and focus on the degree to which people cope with their pain—for example, by changing or controlling their emotions and thoughts, by engaging in self-care, and by manipulating the environment around them. Exploratory interviews indicated that people coped with pain in many ways beyond visits to their chiropractor or other health care providers.<sup>7</sup> We identified broad domains of coping based on the coping literature,<sup>7,8</sup> the exploratory interviews, and logic (eg, we assumed that if patients were coping by modifying one part of their physical environment, like their home, they might also be modifying another environment, like at work).

We developed items assessing coping and self-treating behaviors covering 6 domains (cognitive, self-care, environmental, prescription medications, social activities, and work). Items asked participants how often they had done each coping behavior during the past 6 months to manage their pain. Twenty of the items were administered using a 5-point response scale (never, rarely, sometimes, often, always) and a yes/no response scale was used for 6 of the items (made large changes at home, made small changes at home, wore a lifting belt, changed duties at work, made

**Table 1.** *Frequencies for Coping Items*

Coping Items	Never N (%)	Rarely N (%)	Sometimes N (%)	Often N (%)	Always N (%)
Cognitive					
Meditated or used guided imagery	885 (53)	263 (16)	326 (20)	157 (9)	41 (2)
Thought about what I need to do for pain	29 (2)	73 (4)	470 (28)	831 (50)	261 (16)
Psychological counseling	1341 (82)	120 (7)	101 (6)	61 (4)	16 (1)
Self-care					
Exercised	39 (2)	114 (7)	412 (25)	621 (37)	474 (29)
Took over-the-counter pain medications	132 (8)	228 (14)	569 (34)	526 (31)	218 (13)
Took herbs, other supplements, or vitamins	759 (45)	212 (13)	296 (18)	247 (15)	155 (9)
Used hot pads/ice packs	103 (6)	220 (13)	526 (32)	569 (34)	245 (15)
Rested	9 (0.5)	76 (5)	581 (35)	822 (50)	172 (10)
Prescription meds					
Got injections/shots	1375 (82)	140 (8)	108 (7)	33 (2)	11 (1)
Took nonopioid prescription meds	1222 (73)	149 (9)	127 (8)	76 (4)	93 (6)
Took opioid prescription meds	1169 (70)	256 (15)	153 (9)	60 (4)	35 (2)
Social activities					
Reduced amount of time spent with friends	550 (33)	486 (29)	462 (28)	154 (9)	20 (1)
Avoided social activities	498 (30)	468 (28)	511 (31)	171 (10)	19 (1)
Talked to someone who gave me advice/listened	371 (22)	432 (26)	588 (35)	242 (15)	34 (2)
Received emotional support	392 (24)	380 (23)	507 (30)	292 (17)	96 (6)
Received support to help with daily tasks	618 (37)	452 (27)	425 (25)	143 (9)	27 (2)
Did fun things to get my mind off pain	215 (13)	319 (19)	711 (43)	368 (22)	54 (3)
Work					
Missed days of work	735 (60)	286 (23)	173 (14)	25 (2)	2 (0.2)
Reduced amount of time worked	732 (60)	236 (19)	205 (17)	32 (3)	8 (1)
	No		Yes		
Changed duties at work	940 (77)		287 (23)		
Made ergonomic improvements	741 (60)		486 (40)		
Environmental					
Made larger changes to home	1464 (88)		204 (12)		
Made smaller changes to home	1011 (61)		658 (39)		

**Table 2.** Mean Total Count Coping Score by Demographic and Health Characteristics

Demographic and Health Characteristics	Total Count Mean (Standard Deviation) Possible Range 0-19
Overall	8.99 (3.06)
Age	
18-29	8.67 (3.28)
30-39	8.79 (3.13)
40-49	8.93 (3.02)
50-59	9.28 (3.14)
60-69	9.22 (2.91)
70+	8.67 (2.75)
	$F = 2.08, P = .06$
Sex	
Female	9.39 (2.97)
Male	8.02 (3.08)
	$t = -8.41, P < .001$
Hispanic	
Yes	9.99 (3.35)
No	8.96 (3.04)
	$t = 2.84, P = .005$
Rating of back pain on average	
0-3	8.32 (2.94)
4-6	9.58 (3.12)
7-10	11.89 (2.91)
	$F = 46.13, P < .001$
Rating of perceived success of chiropractic treatment	
Slightly	10.13 (3.80)
Somewhat	9.26 (2.97)
Very	8.90 (3.08)
Extremely	8.74 (2.97)
	$F = 3.38, P = .009$
Rating of physical health	
Excellent	8.15 (2.62)
Very good	8.40 (2.85)
Good	9.36 (3.11)
Fair/poor	10.18 (3.29)
	$F = 21.72, P < .001$
Frequency back pain has been an ongoing problem	
Every day	9.73 (3.28)
Half of the days	9.24 (3.03)
<Half of the days	8.39 (2.81)
	$F = 29.06, P < .001$

ergonomic improvements to my work station, went on disability leave). Table 1 presents content of coping items categorized by hypothesized domains.

## Analysis Plan

We created counts across items within each hypothesized domain. Items administered using the never-always response scale were first dichotomized (0 = never or rarely, 1 = sometimes, often, or always), and then items within each domain were summed to create counts. In addition, a total count score was constructed summing dichotomous items across domains, leaving out work items, which were only relevant to those working full time or part time.

Mean counts and standard deviations were generated by levels of patient characteristics: age group, sex, Hispanic (yes/no), a rating of back pain on average in the past 6 months, a global rating of physical health, frequency in which back pain had been an ongoing problem in the past 6 months, and a rating of how successful the patient thought their chiropractic treatment would be in reducing their pain. One-way analysis of variance and 2-sample  $t$  tests were used to yield  $F$  and  $t$  values to determine whether coping activities varied significantly by these patient characteristics. We also examined the extent to which frequencies of individual coping items, on their original 1-5 response choice scale, varied by these patient characteristics, with associated  $F$  or  $t$  tests.

To characterize the magnitude of differences between groups for the total coping count, we calculated effect sizes (ESs) (Cohen's  $d$ ) of the differences between means, using Cohen's rules of thumb where 0.20 is small, 0.50 is medium, and 0.80 is large.<sup>9</sup>

## RESULTS

Characteristics of study participants are presented elsewhere.<sup>10</sup> Of 2646 patients visiting chiropractors who consented to the study, 2024 completed a baseline questionnaire. Of the sample of 2024, 1677 had CLBP (with or without chronic neck pain) and are the focus of the analyses in this paper. Demographic characteristics of this sample were like the total sample, with a mean age of 49 years, 95% non-Hispanic, 92% white, 72% female, with mean income in the \$60 000 to \$79 999 range.

Table 1 shows the frequency of reported coping behaviors. The most frequent behaviors for managing pain during the prior 6 months included 1 cognitive item—thinking about what one needs to do for pain (94% said sometimes, often, or always)—and 4 self-care items: resting (95% sometimes-always), exercising (91% sometimes-always), using hot pads or ice packs at home (80% sometimes-always), and taking over-the-counter pain medicines such as ibuprofen, naproxen, and

**Table 3.** Mean Subdomain Scores by Demographic and Health Characteristics

Demographic and Health Characteristics	Cognitive Count Mean (SD) Range 0-3 <sup>a</sup>	Self-Care Count Mean (SD) Range 0-5	Prescription Medicine Count Mean (SD) Range 0-3	Social Activities Count Mean (SD) Range 0-6	Environmental Count Mean (SD) Range 0-2	Work Count Mean (SD) Range 0-4
Overall	1.35 (0.67)	3.84 (0.96)	0.41 (0.75)	2.88 (1.75)	0.51 (0.65)	0.98 (1.05)
Age						
18-29	1.36 (0.71)	3.61 (1.07)	0.30 (0.68)	2.89 (1.79)	0.51 (0.67)	1.03 (1.13)
30-39	1.32 (0.71)	3.82 (1.03)	0.28 (0.63)	2.87 (1.84)	0.50 (0.62)	1.02 (1.09)
40-49	1.35 (0.62)	3.86 (0.94)	0.42 (0.79)	2.85 (1.70)	0.44 (0.60)	0.96 (0.97)
50-59	1.42 (0.69)	3.95 (0.91)	0.47 (0.80)	2.89 (1.78)	0.55 (0.67)	0.96 (1.08)
60-69	1.35 (0.65)	3.88 (0.88)	0.52 (0.81)	2.90 (1.72)	0.55 (0.67)	0.96 (1.00)
70+	1.20 (0.54)	3.66 (0.92)	0.45 (0.72)	2.82 (1.58)	0.53 (0.68)	0.67 (0.86)
	$F = 2.28$ $P = .04$	$F = 4.35$ $P < .001$	$F = 4.92$ $P = .0002$	$F = .06$ $P = .99$	$F = 1.23$ $P = .29$	$F = .86$ $P = .50$
Sex						
Female	1.41 (0.68)	3.92 (0.92)	0.43 (0.76)	3.08 (1.73)	0.54 (0.65)	1.01 (1.06)
Male	1.20 (0.62)	3.62 (1.03)	0.36 (0.72)	2.39 (1.69)	0.45 (0.64)	0.92 (1.01)
	$t = -5.67$ $P < .001$	$t = -5.79$ $P < .001$	$t = -1.93$ $P = .053$	$t = -7.43$ $P < .005$	$t = -2.72$ $P = .01$	$t = -1.28$ $P = .20$
Hispanic						
Yes	1.55 (0.83)	4.04 (0.94)	0.59 (0.89)	3.19 (1.63)	0.61 (0.74)	1.22 (1.30)
No	1.34 (0.66)	3.83 (0.96)	0.41 (0.75)	2.87 (1.75)	0.50 (0.64)	0.97 (1.03)
	$t = 2.70$ $P = .007$	$t = 1.86$ $P = .06$	$t = 2.02$ $P = .04$	$t = 1.54$ $P = .12$	$t = 1.34$ $P = .18$	$t = 1.79$ $P = .07$
Rating of back pain on average						
0-3	1.28 (0.64)	3.74 (0.98)	0.30 (0.65)	2.57 (1.73)	0.44 (0.62)	0.85 (0.95)
4-6	1.34 (0.67)	3.84 (0.94)	0.61 (0.86)	3.23 (1.71)	0.56 (0.69)	1.19 (1.21)
7-10	1.62 (0.80)	4.06 (0.84)	1.25 (1.01)	4.13 (1.38)	0.83 (0.70)	1.42 (1.26)
	$F = 6.33$ $P = .002$	$F = 3.43$ $P = .03$	$F = 50.55$ $P < .001$	$F = 31.50$ $P < .005$	$F = 11.39$ $P < .001$	$F = 10.92$ $P < .001$
Rating of perceived success of chiropractic treatment						
Slightly	1.5 (0.81)	3.82 (0.93)	0.73 (1.06)	3.50 (2.05)	0.48 (0.57)	1.00 (1.16)
Somewhat	1.30 (0.61)	3.85 (0.95)	0.51 (0.82)	3.03 (1.70)	0.58 (0.69)	1.04 (1.00)
Very	1.36 (0.68)	3.82 (0.97)	0.38 (0.72)	2.80 (1.74)	0.52 (0.64)	0.98 (1.08)
Extremely	1.36 (0.68)	3.85 (0.96)	0.32 (0.66)	2.79 (1.75)	0.42 (0.61)	0.92 (0.98)
	$F = 2.32$ $P = .055$	$F = .12$ $P = .97$	$F = 6.53$ $P < .001$	$F = 3.37$ $P = .01$	$F = 3.22$ $P = .01$	$F = .60$ $P = .66$

**Table 3.** (continued)

Demographic and Health Characteristics	Cognitive Count Mean (SD) Range 0-3 <sup>a</sup>	Self-Care Count Mean (SD) Range 0-5	Prescription Medicine Count Mean (SD) Range 0-3	Social Activities Count Mean (SD) Range 0-6	Environmental Count Mean (SD) Range 0-2	Work Count Mean (SD) Range 0-4
Rating of physical health						
Excellent	1.39 (0.61)	3.81 (0.96)	0.28 (0.62)	2.32 (1.62)	0.35 (0.54)	0.81 (1.04)
Very good	1.33 (0.67)	3.81 (0.95)	0.26 (0.59)	2.55 (1.67)	0.46 (0.60)	0.84 (0.90)
Good	1.32 (0.67)	3.87 (0.96)	0.50 (0.82)	3.09 (1.72)	0.58 (0.68)	1.09 (1.12)
Fair/poor	1.46 (0.70)	3.82 (0.97)	0.71 (0.91)	3.58 (1.80)	0.61 (0.71)	1.24 (1.17)
	$F = 2.33$ $P = .054$	$F = .4$ $P = .81$	$F = 19.82$ $P < .001$	$F = 23.4$ $P < .001$	$F = 8.35$ $P < .001$	$F = 6.66$ $P < .001$
Frequency back pain has been an ongoing problem						
Every day	1.35 (0.68)	3.87 (1.00)	0.64 (0.91)	3.24 (1.74)	0.63 (0.71)	1.24 (1.12)
Half days	1.39 (0.68)	3.90 (0.90)	0.45 (0.77)	2.97 (1.76)	0.52 (0.64)	1.01 (1.08)
<Half days	1.32 (0.65)	3.78 (0.96)	0.26 (0.58)	2.60 (1.70)	0.44 (0.61)	0.83 (0.96)
	$F = 1.60$ $P = .20$	$F = 3.06$ $P = .047$	$F = 37.5$ $P < .001$	$F = 19.23$ $P < .001$	$F = 12.02$ $P < .001$	$F = 14.90$ $P < .001$

SD, standard deviation.

<sup>a</sup> Possible range.

acetaminophen (78% sometimes-always). The least frequent behaviors include 1 cognitive item (getting psychological counseling [11% sometimes-always]), the 3 prescription medication items (getting shots or injections including steroids, epidurals, or cortisol [9% sometimes-always]; taking opioid medications such as Vicodin, Norco, hydrocodone, or codeine; or taking nonopioid prescription medications such as celecoxib, meloxicam, or duloxetine [15% and 18%, respectively, sometimes-always]), and 1 environmental change item (making large changes to the respondent's home such as installing a ramp or getting a new chair or bed [12% said yes]). The frequency of reducing social activities to deal with pain was substantial, ranging from 36% to 68% of these activities occurring sometimes to always.

Table 2 presents mean total count scores (possible range 0-19) omitting work-related items. Overall, respondents reported using (sometimes, often, or always) an average of 9 coping behaviors in the prior 6 months. Although the variation in the average number of behaviors used across groups was often statistically significant, potentially owing to the large sample size, the largest variations were seen among those with more severe back pain ( $ES = 1.22$  for comparison of pain ratings 0-3 to 7-10), those who rated their health as fair or poor ( $ES = 0.68$  for comparison to rating of excellent), and those with daily occurrences of pain ( $ES = 0.44$  for

comparison to those with pain less than half the days). Respondents who perceived the success of chiropractic treatment as only slight reported higher numbers of coping behaviors than those with more favorable perceptions ( $ES = 0.41$  for comparison to extremely). Fewer behaviors were reported among the youngest (age 18-29) and oldest (age 70+). Female respondents tended to report using more coping behaviors than men ( $ES = 0.45$ ), and Hispanics reported use of more types of behaviors than non-Hispanics ( $ES = 0.33$ ).

Table 3 presents mean count scores for hypothesized subdomains. The pattern of use of more types of coping in those with more severe pain, those who rated their health as fair or poor, and those with pain nearly every day was similar across all domains, but most pronounced for the prescription medication domain (eg, got injections, took nonopioid prescription medications, took opioid prescription medications) and social activity domain. Number of self-care behaviors (eg, exercised, took over-the-counter pain medications, took herbs/supplements, used hot pads/ice packs, rested) did not vary across ratings of physical health. Numbers of cognitive (eg, meditated, thought about what I need to do for pain, psychological counseling), self-care, and work counts (eg, missed days of work; reduced amount of time worked; changed duties at work, made ergonomic improvements) did not vary across ratings of the perceived success of chiropractic treatment.

**Table 4.** Mean Frequency Item Scores by Demographic and Health Characteristics

Demographic and Health Characteristics	Cognitive Item Frequencies			Self-Care Item Frequencies				
	Meditated Mean (SD)	Thought Mean (SD)	Counseling Mean (SD)	Exercised Mean (SD)	OTC Medicines Mean (SD)	Herbs Mean (SD)	Hot Pads/Ice Mean (SD)	Rested Mean (SD)
Overall <sup>a</sup>	1.9 (1.1)	3.7 (0.8)	1.3 (0.8)	3.8 (1.0)	3.3 (1.1)	2.3 (1.4)	3.4 (1.1)	3.6 (0.7)
Age								
18-29	1.9 (1.1)	3.7 (0.9)	1.4 (0.9)	3.8 (0.9)	3.0 (1.2)	2.0 (1.3)	3.2 (1.1)	3.8 (0.8)
30-39	1.9 (1.1)	3.7 (0.9)	1.4 (0.9)	3.8 (0.9)	3.2 (1.0)	2.3 (1.4)	3.3 (1.1)	3.6 (0.8)
40-49	1.9 (1.1)	3.8 (0.8)	1.4 (0.8)	3.8 (0.9)	3.4 (1.0)	2.3 (1.4)	3.4 (1.0)	3.6 (0.8)
50-59	2.0 (1.2)	3.8 (0.8)	1.4 (0.8)	3.9 (1.0)	3.4 (1.0)	2.4 (1.5)	3.5 (1.1)	3.6 (0.7)
60-69	2.0 (1.2)	3.7 (0.8)	1.3 (0.7)	3.9 (1.0)	3.3 (1.2)	2.4 (1.4)	3.4 (1.1)	3.7 (0.7)
70+	1.7 (1.1)	3.7 (0.9)	1.2 (0.7)	3.5 (1.2)	3.3 (1.1)	2.0 (1.4)	3.4 (1.1)	3.7 (0.7)
	$F = 1.84$ $P = .10$	$F = 0.59$ $P = 0.70$	$F = 1.73$ $P = .12$	$F = 3.49$ $P = .004$	$F = 4.92$ $P < .001$	$F = 3.07$ $P = .01$	$F = 2.25$ $P = .05$	$F = 1.65$ $P = .14$
Sex								
Female	2.0 (1.2)	3.8 (0.8)	1.4 (0.9)	3.8 (1.0)	3.3 (1.1)	2.4 (1.4)	3.5 (1.0)	3.7 (0.7)
Male	1.7 (1.0)	3.6 (0.9)	1.2 (0.7)	3.8 (1.0)	3.2 (1.1)	2.1 (1.3)	3.1 (1.1)	3.6 (0.8)
	$t = -5.23$ $P < .001$	$t = -3.52$ $P < .001$	$t = -3.26$ $P = .001$	$t = 0.05$ $P = .96$	$t = -2.82$ $P = .005$	$t = -3.56$ $P < .001$	$t = -6.74$ $P < .001$	$t = -2.48$ $P = .01$
Hispanic								
Yes	2.1 (1.3)	3.8 (0.9)	1.7 (1.1)	3.7 (1.1)	3.4 (1.1)	2.4 (1.5)	3.6 (1.0)	4.0 (0.7)
No	1.9 (1.1)	3.7 (0.8)	1.3 (0.8)	3.8 (1.0)	3.3 (1.1)	2.3 (1.4)	3.4 (1.1)	3.6 (0.7)
	$t = 1.25$ $P = .21$	$t = .74$ $P = .46$	$t = 3.84$ $P < .001$	$t = -.94$ $P = .35$	$t = .68$ $P = .50$	$t = .92$ $P = .36$	$t = 1.79$ $P = .07$	$t = 3.62$ $P < .001$
Overall	1.9 (1.1)	3.7 (0.8)	1.3 (0.8)	3.8 (1.0)	3.3 (1.1)	2.3 (1.4)	3.4 (1.1)	3.6 (0.7)
Rating of back pain on average								
0-3	1.9 (1.1)	3.6 (0.8)	1.2 (0.7)	4.0 (0.9)	3.2 (1.1)	2.1 (1.3)	3.2 (1.1)	3.6 (0.8)
4-6	1.9 (1.2)	3.9 (0.8)	1.4 (0.8)	3.7 (1.1)	3.4 (1.2)	2.3 (1.4)	3.5 (1.1)	3.7 (0.7)
7-10	2.0 (1.1)	4.0 (1.0)	1.7 (1.1)	3.6 (1.2)	3.8 (1.1)	2.6 (1.5)	3.8 (0.9)	3.9 (0.7)
	$F = .28$ $P = .75$	$F = 10.33$ $P < .001$	$F = 10.36$ $P < .001$	$F = 11.16$ $P < .001$	$F = 11.99$ $P < .001$	$F = 5.74$ $P = .003$	$F = 11.78$ $P < .001$	$F = 7.31$ $P < .001$
Rating of perceived success of chiropractic treatment								
Slightly	2.1 (1.2)	3.5 (0.8)	1.5 (1.1)	3.5 (1.2)	3.4 (0.9)	2.2 (1.2)	3.4 (1.1)	3.6 (0.6)
Somewhat	1.8 (1.0)	3.8 (0.8)	1.3 (0.8)	3.7 (0.9)	3.4 (1.1)	2.2 (1.4)	3.5 (1.0)	3.6 (0.8)
Very	1.9 (1.2)	3.7 (0.8)	1.4 (0.8)	3.8 (1.0)	3.3 (1.1)	2.3 (1.4)	3.4 (1.1)	3.6 (0.7)
Extremely	2.0 (1.2)	3.7 (0.9)	1.3 (0.8)	4.0 (1.0)	3.2 (1.1)	2.4 (1.4)	3.3 (1.1)	3.6 (0.8)
	$F = 3.29$ $P = .01$	$F = 1.73$ $P = .14$	$F = .87$ $P = .48$	$F = 5.75$ $P < .001$	$F = 2.23$ $P = .06$	$F = .77$ $P = .54$	$F = 1.32$ $P = .26$	$F = .13$ $P = .97$



**Table 4.** (continued)

Demographic and Health Characteristics	Cognitive Item Frequencies			Self-Care Item Frequencies				
	Meditated Mean (SD)	Thought Mean (SD)	Counseling Mean (SD)	Exercised Mean (SD)	OTC Medicines Mean (SD)	Herbs Mean (SD)	Hot Pads/Ice Mean (SD)	Rested Mean (SD)
Rating of physical health								
Excellent	2.0 (1.2)	3.7 (0.8)	1.2 (0.7)	4.4 (0.8)	3.2 (1.1)	2.3 (1.5)	3.2 (1.2)	3.5 (0.8)
Very good	2.0 (1.2)	3.7 (0.8)	1.3 (0.7)	4.1 (0.9)	3.2 (1.1)	2.2 (1.4)	3.3 (1.0)	3.6 (0.7)
Good	1.8 (1.1)	3.7 (0.8)	1.4 (0.9)	3.6 (1.0)	3.4 (1.0)	2.3 (1.4)	3.4 (1.1)	3.6 (0.7)
Fair/poor	2.0 (1.1)	3.8 (0.9)	1.6 (1.1)	3.2 (1.0)	3.4 (1.2)	2.5 (1.5)	3.6 (1.1)	3.9 (0.8)
	$F = 2.45$ $P = .045$	$F = .93$ $P = .44$	$F = 8.4$ $P < .001$	$F = 65.07$ $P < .001$	$F = 3.66$ $P = .006$	$F = 1.20$ $P = .31$	$F = 7.43$ $P < .001$	$F = 7.61$ $P < .001$
Frequency back pain has been an ongoing problem								
Every day	1.8 (1.1)	3.9 (0.8)	1.4 (0.9)	3.8 (1.1)	3.4 (1.2)	2.4 (1.5)	3.5 (1.1)	3.7 (0.7)
Half days	2.0 (1.5)	3.7 (0.8)	1.4 (0.9)	3.8 (1.0)	3.3 (1.1)	2.4 (1.4)	3.4 (1.0)	3.6 (0.8)
<Half days	1.9 (1.2)	3.7 (0.8)	1.3 (0.8)	3.9 (1.0)	3.2 (1.0)	2.2 (1.4)	3.2 (1.1)	3.6 (0.7)
	$F = 1.92$ $P = .15$	$F = 7.95$ $P < .001$	$F = 3.27$ $P = .04$	$F = 2.13$ $P = .12$	$F = 7.94$ $P < .001$	$F = 3.43$ $P = .03$	$F = 9.39$ $P < .001$	$F = 3.90$ $P = .02$

<sup>a</sup> Response choices: 1 = never, 2 = rarely, 3 = sometimes, 4 = often, 5 = always.

There was variation across age in self-care and prescription medication domains with less numbers of self-care behaviors in the very youngest and oldest and more prescription medication behaviors as age increased. Female respondents reported more coping across domains, except for prescription medication and work domains. Differences between Hispanics and non-Hispanics seen for the total count tended to be most significant for the cognitive count and nonsignificant for the self-care, social activity (eg, reduced amount of time spent with friends, avoided social activities, talked to someone, received emotional support, received help with daily tasks, did fun things to take my mind off things), environmental (eg, made larger changes to home, made smaller changes to home), and work counts.

At the item level, mean frequency response scores (range 1-5) by demographic and health characteristics are presented in Tables 4 and 5. There was little variation across age in frequency with which cognitive and social activity items were conducted. Among self-care items, exercise was least frequent in the oldest (70+) respondents, whereas use of over-the-counter pain medications was less frequent in the youngest respondents. Similarly, use of injections, nonopioid prescription, and opioid medicine was less frequent in younger respondents. Females reported significantly more frequent use of almost all types of coping behaviors (except for exercise, injections, and opioid medicine). There were few differences between Hispanic and non-Hispanic respondents, although Hispanics reported

significantly more frequency of psychological counseling, resting, use of opioid medicine, and talking to someone who gave them advice about their pain.

Almost all types of coping activities were conducted more frequently in patients with worse back pain (rating of pain on average and frequency with which back pain has been an ongoing problem) and worse physical health. However, exercise was more frequent in those with better physical health and less reported pain. Respondents who thought their chiropractic treatment was more likely to result in reduced pain reported significantly more frequent exercising, less use of all 3 types of prescription medication, and less reduction and restriction in social activities.

## DISCUSSION

Results of these analyses show that patients receiving chiropractic treatment for their CLBP are actively engaged in self-treatment and use a wide variety of management techniques to cope with their back pain. The quantity and frequency with which each are used vary by demographic and health characteristics. Self-care coping strategies were used most frequently, with psychological counseling used least frequently.

Those who reported being sickest tended to report using a greater variety of coping techniques and to use these techniques more frequently. The exception was exercise,

**Table 5.** Mean Frequency Item Scores by Demographic and Health Characteristics

Demographic and Health Characteristics	Prescription Medication Item Frequencies			Social Activity Item Frequencies					
	Injections or Shots Mean (SD)	Nonopioid Meds Mean (SD)	Opioid Meds Mean (SD)	Reduced Time With Friends Mean (SD)	Avoided Activities Mean (SD)	Got Advice Mean (SD)	Emotional Support Mean (SD)	Help With Daily Activities Mean (SD)	Did Fun Things Mean (SD)
Overall	1.3 (0.7)	1.6 (1.2)	1.5 (0.9)	2.2 (1.0)	2.2 (1.0)	2.5 (1.0)	2.6 (1.2)	2.1 (1.0)	2.8 (1.0)
Age									
18-29	1.2 (0.5)	1.4 (0.9)	1.4 (0.8)	2.2 (1.0)	2.2 (1.0)	2.5 (1.1)	2.6 (1.1)	2.1 (1.0)	3.0 (1.1)
30-39	1.1 (0.5)	1.4 (1.0)	1.4 (0.8)	2.1 (1.0)	2.2 (1.0)	2.5 (1.0)	2.6 (1.2)	2.2 (1.0)	2.8 (1.0)
40-49	1.3 (0.8)	1.7 (1.2)	1.5 (0.9)	2.2 (1.0)	2.4 (1.1)	2.5 (1.0)	2.5 (1.2)	2.1 (1.1)	2.7 (1.0)
50-59	1.4 (0.8)	1.6 (1.2)	1.6 (1.0)	2.2 (1.1)	2.3 (1.1)	2.4 (1.1)	2.5 (1.2)	2.1 (1.0)	2.8 (1.0)
60-69	1.4 (0.8)	1.8 (1.3)	1.6 (1.0)	2.1 (1.0)	2.2 (0.9)	2.5 (1.0)	2.6 (1.2)	2.1 (1.1)	2.9 (1.0)
70+	1.4 (0.9)	1.6 (1.2)	1.5 (0.9)	2.0 (0.9)	2.0 (1.0)	2.4 (1.1)	2.8 (1.2)	2.0 (1.0)	3.0 (1.0)
	$F = 7.44$ $P < .001$	$F = 5.45$ $P < .001$	$F = 3.19$ $P = .01$	$F = 1.67$ $P = .14$	$F = 2.14$ $P = .06$	$F = .36$ $P = .88$	$F = 1.92$ $P = .09$	$F = 1.15$ $P = .33$	$F = 2.75$ $P = .02$
Sex									
Female	1.3 (0.7)	1.6 (1.2)	1.5 (0.9)	2.2 (1.0)	2.3 (1.0)	2.5 (1.0)	2.7 (1.2)	2.2 (1.1)	2.9 (1.0)
Male	1.3 (0.7)	1.5 (1.0)	1.5 (0.9)	2.0 (1.0)	2.1 (1.0)	2.4 (1.0)	2.3 (1.1)	1.8 (0.9)	2.6 (1.0)
	$t = -.51$ $P = .61$	$t = -2.33$ $P = .02$	$t = -.35$ $P = .73$	$t = -3.23$ $P = .001$	$t = -2.54$ $P = .01$	$t = -2.99$ $P = .003$	$t = -7.15$ $P < .001$	$t = -6.24$ $P < .001$	$t = -5.69$ $P < .001$
Hispanic									
Yes	1.2 (0.6)	1.7 (1.2)	1.8 (1.0)	2.4 (1.1)	2.4 (1.0)	2.8 (1.0)	2.8 (1.2)	2.2 (1.0)	3.0 (1.0)
No	1.3 (0.7)	1.6 (1.2)	1.5 (0.9)	2.2 (1.0)	2.2 (1.0)	2.5 (1.0)	2.6 (1.2)	2.1 (1.0)	2.8 (1.0)
	$t = -.72$ $P = .47$	$t = .81$ $P = .42$	$t = 2.12$ $P = .03$	$t = 1.56$ $P = .12$	$t = .90$ $P = .37$	$t = 2.20$ $P = .03$	$t = 1.32$ $P = .18$	$t = .46$ $P = .65$	$t = 1.51$ $P = .13$

**Table 5.** (continued)

Demographic and Health Characteristics	Prescription Medication Item Frequencies			Social Activity Item Frequencies					
	Injectons or Shots Mean (SD)	Nonopioid Meds Mean (SD)	Opioid Meds Mean (SD)	Reduced Time With Friends Mean (SD)	Avoided Activities Mean (SD)	Got Advice Mean (SD)	Emotional Support Mean (SD)	Help With Daily Activities Mean (SD)	Did Fun Things Mean (SD)
Overall	1.3 (0.7)	1.6 (1.2)	1.5 (0.9)	2.2 (1.0)	2.5 (1.0)	2.5 (1.0)	2.6 (1.2)	2.1 (1.0)	2.8 (1.0)
Rating of back pain on average									
0-3	1.2 (0.7)	1.4 (0.9)	1.4 (0.8)	2.0 (0.9)	2.1 (0.9)	2.4 (1.0)	2.5 (1.2)	2.0 (1.0)	2.7 (1.0)
4-6	1.4 (0.8)	1.8 (1.3)	1.8 (1.1)	2.3 (1.1)	2.5 (1.1)	2.6 (1.1)	2.7 (1.2)	2.3 (1.1)	2.8 (1.0)
7-10	2.0 (1.3)	2.6 (1.6)	2.4 (1.3)	3.0 (1.2)	3.0 (1.1)	2.8 (1.1)	3.0 (1.2)	2.5 (1.2)	3.0 (0.8)
	$F = 21.72$ $P < .001$	$F = 39.76$ $P < .001$	$F = 31.68$ $P < .001$	$F = 31.46$ $P < .001$	$F = 36.35$ $P < .001$	$F = 7.01$ $P < .001$	$F = 5.63$ $P = .004$	$F = 10.74$ $P < .001$	$F = 2.63$ $P = .07$
Rating of perceived success of chiropractic treatment									
Slightly	1.5 (0.9)	2.0 (1.5)	1.8 (1.4)	2.6 (1.0)	2.7 (1.0)	2.5 (1.0)	2.6 (1.1)	2.3 (1.1)	2.8 (0.8)
Somewhat	1.4 (0.8)	1.7 (1.3)	1.7 (1.1)	2.4 (1.0)	2.4 (1.0)	2.5 (1.0)	2.6 (1.1)	2.2 (1.1)	2.8 (0.9)
Very	1.3 (0.7)	1.5 (1.1)	1.5 (0.9)	2.1 (1.0)	2.2 (1.0)	2.5 (1.0)	2.6 (1.2)	2.1 (1.0)	2.9 (1.0)
Extremely	1.2 (0.6)	1.5 (1.0)	1.4 (0.8)	2.0 (1.0)	2.1 (1.0)	2.5 (1.1)	2.6 (1.2)	2.0 (1.0)	2.8 (1.1)
	$F = 4.06$ $P = .003$	$F = 6.57$ $P < .001$	$F = 7.82$ $P < .001$	$F = 9.72$ $P < .001$	$F = 7.72$ $P < .001$	$F = .32$ $P = .87$	$F = .21$ $P = .93$	$F = 2.93$ $P = .02$	$F = .48$ $P = .75$
Rating of physical health									
Excellent	1.3 (0.6)	1.3 (0.9)	1.4 (0.8)	1.7 (0.9)	1.8 (0.9)	2.5 (1.2)	2.4 (1.3)	1.9 (1.0)	2.7 (1.2)
Very good	1.2 (0.6)	1.4 (0.9)	1.4 (0.8)	1.9 (0.9)	2.0 (0.9)	2.4 (1.1)	2.5 (1.2)	1.9 (1.0)	2.9 (1.0)
Good	1.4 (0.8)	1.7 (1.2)	1.6 (1.0)	2.3 (1.0)	2.4 (1.0)	2.5 (1.0)	2.7 (1.1)	2.2 (1.0)	2.9 (1.0)
Fair/poor	1.5 (0.9)	2.1 (1.5)	1.8 (1.2)	2.8 (1.1)	2.9 (1.0)	2.5 (1.1)	2.8 (1.3)	2.5 (1.1)	2.7 (0.9)
	$F = 9.59$ $P < .001$	$F = 18.16$ $P < .001$	$F = 12.78$ $P < .001$	$F = 47.34$ $P < .001$	$F = 45.85$ $P < .001$	$F = 2.06$ $P = .08$	$F = 6.08$ $P < .001$	$F = 19.76$ $P < .001$	$F = 1.47$ $P = .21$
Frequency back pain has been an ongoing problem									
Every day	1.4 (0.9)	1.9 (1.4)	1.8 (1.2)	2.4 (1.1)	2.5 (1.1)	2.5 (1.1)	2.7 (1.2)	2.3 (1.2)	2.8 (1.0)
Half days	1.3 (0.8)	1.6 (1.1)	1.6 (0.9)	2.2 (1.0)	2.2 (1.0)	2.6 (1.0)	2.6 (1.2)	2.1 (1.0)	2.9 (1.0)
<Half days	1.2 (0.6)	1.4 (0.9)	1.3 (0.7)	2.0 (1.0)	2.1 (1.0)	2.4 (1.0)	2.5 (1.2)	2.0 (1.0)	2.8 (1.0)
	$F = 20.60$ $P < .001$	$F = 28.83$ $P < .001$	$F = 29.17$ $P < .001$	$F = 25.51$ $P < .001$	$F = 22.40$ $P < .001$	$F = 5.70$ $P = .003$	$F = 1.85$ $P = .16$	$F = 16.45$ $P < .001$	$F = 4.67$ $P = .01$

where patients in better health reported more frequent use of exercise as a coping technique. Coping strategy counts varied little by rating of the perceived success of chiropractic treatment, although interestingly those patients who perceived their treatment would be extremely successful reported less use of prescription medications and social activity coping strategies. They also exercised more.

Although self-care coping strategies like those provided by chiropractors in patient education were reported most frequently, social activities to reduce pain were also used (36%-68% of these activities occurring sometimes to always). These strategies included reduction of social activities but increased receipt of emotional support and advice and help with daily activities among those patients with more pain. Reduction of activities (both social and work) was significantly more likely in patients who reported more severe pain and poorer health.

Older patients reported greater use of prescription medications than younger patients, which could be related to traditionally poorer health among older patients. Types of coping strategies also differed by age with less frequent exercise, less frequent use of herbal medications, and more frequent use of over-the-counter medications and hot pads and ice packs among the oldest patients. Female patients tended to use more coping strategies (except for prescription medications and work modifications). Although overall use of opioid prescription medications was low, Hispanics tended to report slightly but significantly more frequent use than non-Hispanics. They were also significantly more likely to report more frequent use of psychological counseling.

This study contributes to the literature by confirming that patients, as recommended in current guidelines,<sup>11,12</sup> are actively involved in the management of their CLBP, especially those with more severe back pain and who report their physical health as fair or poor. Results provide some guidance to chiropractors who may not be aware of the extent to which their patients with CLBP are seeking alternate forms of pain relief. Use of psychological counseling was low, but there is some evidence of the benefits of cognitive behavioral counseling for patients with severe low back pain.<sup>13</sup> Substantial numbers of patients reported using over-the-counter medications for their pain. Older persons using such medications may be more susceptible to side effects and interactions with their other nonpain medications. Thus, such patients may need close monitoring for such effects. Further analyses should focus on the extent to which multiple coping strategies of different types and frequencies contribute to reduction in overall pain levels among those with CLBP.

## Limitations

This is an exploratory study conducted in 6 states of the United States, and results thus may apply primarily to

persons with CLBP in metropolitan areas who seek chiropractic care. In addition, it was conducted in clinics whose practitioners agreed to participate and among their own patients who also had to agree to participate. As a result, there could be some selection bias. Chronicity of CLBP was assessed if patients reported pain for at least 3 months before seeing the chiropractor or stated that their pain was chronic. Relying on patient report could result in some patients classified as chronic who would not be considered chronic by other criteria. Moreover, because this was a cross-sectional study, we do not know the direction of causality. Although we cannot comment on the clinical significance of these findings, effect sizes for the total count measure tended to be large for comparisons of patients with less pain (and physically healthy) to patients with the most pain (and the least physically healthy). Effect sizes for demographic comparisons were in a smaller, more moderate range.

## CONCLUSION

Persons with chronic back pain are proactive in their coping strategies. There is often a perception that long-term chronic patients have become habituated to their condition and practitioner dependent. But, in this population, where the average length of back pain was 11 years,<sup>10</sup> patients were actively engaged in a variety of coping strategies. Given the length of their back problem, we might have predicted a diminution in such behavior. In addition, CLBP patients reported most frequently the self-care coping strategies typically provided by chiropractors in their patient education.

Overall, in alignment with patients' beliefs that their condition was chronic and thus likely to be lifelong, the population was attempting through a wide range of coping strategies to relieve their pain. The number and frequency of coping strategies differed for subgroups of the population. In addition, at least 1 group (eg, those who rated their health as excellent and those who reported less pain) appear to be in relatively good health but are taking care through exercise to avoid more serious pain.

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## CONTRIBUTORSHIP INFORMATION

Concept development (provided idea for the research): G.W.R., R.D.H., P.M.H., I.D.C.

Design (planned the methods to generate the results): G.W.R., R.D.H., P.M.H., I.D.C.

Supervision (provided oversight, responsible for organization and implementation, writing of the manuscript): C.D.S., G.W.R., M.D.W.

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### Practical Applications

- Chiropractic patients with CLBP are proactive in their coping strategies.
- Patients with CLBP reported most frequently the self-care coping strategies provided by chiropractors in their patient education.
- The number and frequency of coping strategies differed for subgroups of the population.

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